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MIGRANT SHRIKE AT NEST

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MIGRANT SHRIKE

(*Lanius ludovicianus migrans*)

BY IRA N. GABRIELSON

On the 21st of June, 1915, while poking about in a natural hedge composed of plum, hawthorne, and other like trees, I happened to glance up just in time to see a Shrike slipping off through the branches. A little investigation soon disclosed a nest built of sticks, sections of morning glory vines, scraps of paper, and shreds of wool and lined with small roots. Looking into the nest I discovered five eggs. While this nest was too high in the air to photograph successfully I determined to try moving it. On returning July 5th I found five young ones 3 to 5 days old. This suited me exactly as the feeding instinct seems to be at its height during the first few days of the nestling period. Consequently, I cut the branch on which the nest was built and lowered it six feet. While many others have used this method successfully, this was the first nest which I was able to move without disturbing the birds. A blind was erected, but the following morning it had been torn down by cattle. It was replaced and at 5:00 p. m. was entered just long enough to make sure that the old birds were still caring for the young. On July 8 I entered the blind at 11:00 a. m. and remained until 4:45 p. m. watching these birds and taking photographs.

During the seven hours on July 6 and 8 while the nest was under observation the nestlings were fed 39 times or at the rate of 5½ times per hour. Large grasshoppers, crickets, caterpillars, larvæ of various kinds of beetles, and spiders made up the recognizable food materials. The

parents foraged largely from a telephone wire just above the nest. From this lookout they could watch not only the nest but also commanded a view of a considerable area of grassy hillside. Here they watched for the leathery grasshoppers which frequent the roadsides and when one flew the shrikes were after it instantly. I have frequently heard people comment on the supposed unerring accuracy with which insectivorous birds capture their prey, but here at least was one instance where such was not the case. Fortunately my blind was so located that I could see both pursuer and pursued and on this date the shrikes missed fully 50 per cent of the grasshoppers they attempted to catch. From personal experience I know how disconcerting it is to have a gaudy red or yellow winged grasshopper flying immediately before one and suddenly fold its wings and disappear. Apparently it affected the shrikes in the same manner as they flew aimlessly for a moment and then returned to their perch. From my vantage point, of course, it was easy to see the hopper drop beside a clod, the colors blending perfectly. The shrike, however, being in close pursuit saw a very conspicuous insect suddenly drop from its plane of vision and, as the grasshopper was motionless on the ground before the shrike could turn, it had everything in its favor. The fact that one shrike caught three out of six seemed to me to be striking proof of keenness of vision and agility on the wing.

Once an English Sparrow came to the nest and peeped in. Immediately one of the shrikes was after it. They passed from sight around the blind but for several seconds I could hear the rustle of the shrike's wings and the cries of the sparrow. On similar occasions at nests of other species I have seen the sparrows flee from the irate parents but never with any such panic stricken fear as in this case. There was no doubt that the sparrow had recognized the deadly nature of the bird whose home he had so rashly inspected.

On ordinary occasions the parents were very quiet about the nest although twice one of the birds, presumably the female from the actions, uttered a loud harsh scream

just before feeding. Both birds utilized the top of the blind as a perch at times and both had a sterotyped path of approach to the nest through the branches of the plum tree. Sanitary measures were of the usual kind, the excreta being carried some distance away and dropped while the parents were yet flying.

These birds were an exceedingly interesting family and I have wished to spend more time with them than was possible in the circumstances under which I was working.

NOTES ON THE HABITS OF THE BREEDING WATER BIRDS OF CHATHAM COUNTY, GEORGIA

BY W. J. ERICHSEN, SAVANNAH, GA.

[CONTINUED FROM LAST ISSUE]

Hydranassa tricolor ruficollis — LOUISIANA HERON.

Florida caerulea — LITTLE BLUE HERON.

As all of the notes which I have on the nesting of these herons are based on observations made in a fresh water pond on Ossabaw island, it seems not out of place to consider them under one heading, as their nesting habits, as I noted them, are essentially similar. During a visit to Ossabaw island in May, 1915, I estimated the number of pairs of Louisiana and Little Blue Herons nesting there to be between two and three hundred, fully two-thirds of them being the former species. Most of the nests were built in willows, but I noted a few which were placed on the tops of patches of broken down saw grass wherever they were of a sufficiently dense growth to support the weight, and I saw a dozen or more that were built upon the foundations of old nests. Although many nests contained young, the majority of them held from three to four eggs. The nestlings were in various stages of development; some just hatched, while others were nearly old enough to leave the nest. Occasionally one would fall into the water, and if it had attained a sufficient age to have gained enough

strength, would flounder about until it could secure a foothold on one of the many willow stumps which protruded from the water. Whether or not these unlucky youngsters ever succeed in regaining their nests, or a less precarious position, or are identified and fed by their parents until old enough to fly, I am unable to state. It is certain that the very young or weak nestlings which fall overboard are drowned, or are caught by the huge Cotton-mouthed Moccasins which infest the pond. These reptiles also destroy numbers of eggs of the herons.

Throughout the day numbers of these herons can be seen winging their way from the pond to the marshes and creeks at the north end of the island where they feed. They also frequent the swamps in the vicinity of the rookery, feeding upon frogs, crawfish and other animal matter which abounds in such places. The communal instinct, so apparent in their habit of breeding only in colonies, is much in evidence when the birds are feeding, as at this time also they are usually found in companies of from three to a dozen individuals.

These gatherings are nearly always made up entirely of one species; only occasionally will mixed companies be found. Sometimes a solitary individual will be seen patrolling the mud flats and the banks of creeks, but in my experience such occurrences are rare. They are not at all shy, either while feeding or when in the vicinity of their nests. On several occasions while I was wading in the pond individuals of both species alighted on the willows above my head, some even returning to their nests. In connection with their behavior at the nests it may be noted, however, that while the presence of several persons in the pond only slightly disturbed the birds, the acts of breaking a stick within their hearing instantly caused every one to rise into the air simultaneously.

My experience is that the eggs of the Louisiana Heron cannot with certainty be distinguished from those of the Little Blue species, or vice versa, when the two are nesting

in considerable numbers in close proximity. In measuring a large number of eggs those of the former may average a fraction of an inch larger, but both, of course, have the identical tint of bluish green. The same difficulty of identification applies to the eggs of the Snowy Egret, as has been mentioned in the account of that species, and the problem before the collector of the eggs of these three herons is one solved only by "watchful waiting."

If either of these herons winters it must be in exceedingly small numbers, and these must be widely scattered over the immense chain of heavily forested islands and hammocks along the coast, for I have failed to detect either of them in the county during the months of December, January and February. I know of no other locality in Chatham county where they breed, but it is probable that small numbers nest on some of the isolated hammocks which abound on this coast.

Butorides virescens virescens — Green Heron.

While this heron is really abundant, the localities at which it breeds are widely separated and most of them are not easy of access. Although colonies are the rule, now and then an isolated nest is found, and, while it prefers localities where there is water, it is often found nesting in dry woods. In a dense thicket of stunted water oaks growing close to the margin of the salt marsh a short distance from the summer home of G. R. Rossignol on Wilmington island, large numbers of Green Herons annually rear their young. On April 18, 1915, nearly every nest here held its full complement of eggs. On May 30, 1915, in a cluster of oaks growing in damp woods near the Herb river and not far from a much travelled highway, I noted a single nest, within arms reach, containing three eggs. These are my earliest and latest dates respectively when fresh eggs were noted. These birds breed in considerable numbers on Sylvan's island on the Herb river some three miles from the town of Tunderbolt, placing their nests in the extreme tops of tall pine saplings. Probably the most populous colony in the county is near Lazaretto station, on

Tybee island. Here the birds breed in a jungle of oaks difficult to penetrate. So numerous are they that every available nesting site is occupied, many new nests being built upon the foundations of old ones. In May, 1915, I found a few pairs breeding in company with several other species of herons in a pond on Ossabaw island. This species prefers oaks in which to place its nest, and as in this pond, willows afford the only tree nesting sites, it breeds there only in very small numbers. Furthermore, it is apparently averse to breeding in any great numbers in company of other species of herons. Its nest is a shabby affair, being simply a few sticks loosely arranged in a circular manner. Nearly every one that I have examined was without the least sign of a depression to prevent the eggs from rolling out, and I cannot conceive by what mysterious force they are held, during high winds, in nests built in exposed situations. On a number of occasions I have been in rookeries during wind storms, but none of the eggs which were left exposed due to my frightening the birds from them, were blown out. The usual complement is four, although sets of five are frequently laid. The color is bluish green, and in size they average 1.40 x 1.10.

Young Green Herons become active at a surprisingly early age and begin climbing out on the limbs near the nest many days before they are able to fly. The parents exhibit much anxiety when the young are disturbed, often threatening to strike the intruder with their sharp bill.

This species is much given to frequenting the salt marshes where an abundance of food is always to be obtained. After it has satisfied its hunger, it resorts to nearby thickets of trees, where it remains concealed and quiet for long periods. Its food is of much the same character as that of other species of herons.

McQueen's island, between the city of Savannah and Tybee island is a favorite feeding ground for large numbers of these herons. This island is eight miles long, but averages only about one mile wide, in some places being but three hundred yards in width. It is almost wholly composed of salt marsh; here and there

a clump of myrtle bushes or a cluster of stunted live oaks breaks the monotony of this long stretch of boggy waste. The Tybee division of the Central of Georgia railroad traverses the entire length of the island, and for several miles on both sides of the track are to be seen the "pool tables." These curious formations are several disconnected series or groups of shallow depressions in the hard marsh. Each group consists of six to ten symmetrical oblong "tables," each measuring about eight by twelve feet and varying in depth from six to eighteen inches. At each high tide these tables are flooded, and hence are always full of water. Each receding tide leaves stranded in these depressions myriads of minnows and much other aquatic animal matter of various kinds. To these "tables" numbers of Green Herons resort at low tide to secure this choice food.

With the advent of the first cool weather, which is usually between the 5th and 15th of October, there begins a pronounced southward migration which continues well into November. I have noticed that on foggy or rainy nights these flights are more noticeable, or perhaps it should be said more audible, since the passing of the birds would be unsuspected were it not for their loud squawks. Their harsh notes can be heard throughout the night, the more inclement the weather the noisier are the birds. A few individuals winter, but during that season they are widely scattered and therefore seldom detected.

Nycticorax nycticorax naevius —

BLACK-CROWNED NIGHT HERON.

This handsome heron must be included among the rare breeding species. It nests in small numbers in the heron colony on Ossabaw island, but nowhere else, as far as local observers have been able to determine. The birds I found breeding there in May, 1915, were very shy, and as it was almost impossible to positively identify their eggs, due to the great similarity between them and those of the Little Blue and Louisiana Herons, little nesting data was secured. I have not seen above ten or a dozen individuals of

this species in Chatham county during the past ten years, and am therefore unable to give any notes on its life history.

Rallus elegans — KING RAIL.

This species breeds locally in the county but I have never found its nest. T. D. Perry has in his collection a set of ten eggs which was collected by a boy on April 20, 1911, in a small reedy pond along the right of way of the Atlantic Coast Line railroad near its junction with the Ogeechee road. I saw no King Rails in the pond on Ossabaw island during my visit there in May, 1915, although a more favorable nesting environment would be difficult to find.

Rallus crepitans waynei — WAYNE'S CLAPPER RAIL.

Throughout the day the harsh cackling notes of this rail can be heard everywhere in the extensive areas of salt marsh along this coast. It breeds in large numbers, and, as the range of this form and true *crepitans* overlaps in winter, it is also found abundantly at that season. It is a marsh prowler to such a degree that, except of course while in flight during migration, it never leaves the boggy fastnesses, and, due to the difficulty of observation, and progress through its haunts, facts concerning its life history are acquired only with the greatest difficulty. There is some individual variation in degree of shyness, and also in nesting habits. Many birds that I have encountered during the breeding season have exhibited a manner close to stupidity, apparently becoming somewhat confused when discovered upon the nest or even when suddenly come upon in the marsh. In both cases, when the marshes are flooded, the bird nearly always takes wing, rising awkwardly and apparently with much effort, uttering two or three syllables of its cackling note; but at low tide it never resorts to this means of escape but always skulks away in the marsh grass. I have only a few times observed it incubating — in each instance, when the tide was out — and then secured only fleeting glimpses; the bird dropping off the nest and quickly gliding from view through the dense marsh.

The almost monotonous sameness of character of this bird's haunts prohibits it any indulgence in variation in selecting its nesting sites. Its bulky platform of water-soaked and decaying marsh grass stems is always placed as high above the mud as the height of the vegetation will permit, but in spite of this, many eggs and young fall victims to spring tides. Besides this menace, this bird has other enemies to contend with. Fish Crows (*Corvus ossifragus*), Raccoons (*Procyon lotor*) and Minks (*Mustela vison lutensis*) take heavy toll, and hundreds are shot every year by gunners for food. Mortality from all causes, however, does not thin the ranks of this marsh-dweller. In fact I believe it is yearly becoming more abundant. Prolificness, and the unchanging aspect of its haunts due to the fact that they are unfit for agricultural or other uses and are therefore not being reduced in area, are the chief factors in its increase, rendering its extinction unlikely.

The breeding season commences early in April and is frequently prolonged through July if repeated mishaps to the eggs have occurred. Although I have examined many nests of this rail I have never found one that contained more than eleven eggs. Seven to ten seems to constitute the usual complement, as far as my observations go, although I have no doubt that larger sets are frequently laid. On April 18, 1915, in an area of short marsh grass on Cabbage island that is frequently flooded, I found seven eggs which had been deposited simply on the soft mud, no evidence of a nest being noted. Although the marsh had not been flooded since the eggs were deposited, the latter were cold and apparently deserted. No doubt the female was compelled to lay before she had time to construct a nest. The eggs of this bird exibit little variation in ground color or the color and size of the spotting. The former is quite constant, being a deep buff, while the markings are usually small, rounded and quite well defined; brown and lilac, and generally scattered over the entire surface.

This bird is quite an item in the food supply of people living on the "salts," particularly negro fishermen. Numbers of the latter have assured me that the eggs also are

very good eating. The negroes seldom, if ever, walk in the marsh in search of the eggs, but paddle through the creeks and secure what they can find in the marsh close to the banks. Consequently the number taken is inconsiderable as most of the birds build their nests some distance from the rivers and creeks.

Much is yet to be learned of the behavior of this marsh-dweller. Large areas of its marshy retreats are inaccessible unless the observer is provided with some means of progress through them that will eliminate bogging, as the mud in those areas, which are flooded at high tide, is often a foot or more deep and very soft and an invasion afoot is usually impossible.

Gallinula galeata — Florida Gallinule.

I have secured very little data on the nesting habits of this interesting species, and my knowledge of its distribution and abundance in the county is not extensive. It was not until 1915 that it was added to the list of breeding birds of Chatham county. In May of that year G. R. Rossignol, Frank N. Irving and the writer visited Ossabaw island where a number of pairs were found breeding in a fresh water pond. The data follows: May 11, nest containing seven fresh eggs; May 14, one nest containing eight slightly incubated eggs, and one containing five fresh eggs. On the latter date we also noted a nest containing one egg. All of these nests were built a foot above water, in tall reeds and cat-tail flags, and were composed of dead and water-soaked stalks and leaves of these plants. The first nest was discovered by Mr. Irving soon after we had entered the pond. Four feet from this nest was a dense clump of tall reeds, just within the edge of which I stood motionless for an hour and a half, in water waist deep while a torrential rain completed the drenching and added to my discomfiture; all in hopes of catching a glimpse of one of these shy birds. Soon after I took my stand in the reeds I heard a gallinule utter its note and splash about in the water a few feet from the nest, but I was unable to catch sight of it through the dense vegetation. Fully an hour

elapsed during which I heard or saw no gallinules in the immediate vicinity of the nest which I had under observation. I was rapidly growing impatient, not through diminishing interest in the object which had caused me to remain motionless in the reeds for so long, but because of my exceedingly uncomfortable position in the waist-deep water and driving rainstorm.

I was on the point of deserting my post when a loud splashing in the open water near the nest announced the close approach of a gallinule, and a moment later I saw the bird climb up the runway of broken-down reeds to the nest. It remained here only a minute, however, diving into the water and disappearing, having possibly caught sight of me. The gallinules in this pond apparently were restless, continually moving hurriedly from place to place even when undisturbed by us, and were very noisy. Their cackling notes constantly uttered gave the impression that they were abundant, but it is doubtful if more than six or eight pairs were nesting in the pond. We occasionally caught sight of one as it swam across an open space of water. If suddenly encountered they would either dive or spatter swiftly away along the surface of the water, usually choosing the latter method of escape.

The eggs that we collected present little variation, the ground color being buffy, finely spotted with reddish brown. They average 1.70x 1.20.

Many eggs and young of this species are, no doubt, destroyed by Cotton-mouthed Moccasins, which abound in this pond. These ebony denizens of this bird refuge are annually increasing in numbers as they have few natural enemies and are seldom molested by man, as the repellant nature of this rush-grown pond is sufficient to dampen the ardor of anyone but the most enthusiastic bird student. I secured some interesting notes on the habits of these reptiles. On land they are at all times lazy and sluggish, but are extremely active and wary when in the water, swimming with ease and great rapidity. While wading in the pond I frequently noted huge fellows coiled about some limb close

to the surface of the water awaiting an opportunity to make a meal of heron's eggs. At such times a close approach was impossible, as the reptiles would plunge into the water below while I still was some distance away.

Philohela minor — Woodcock.

This fine bird is rare at all times in the immediate vicinity of Savannah but probably occurs more numerously in the less settled sections of the county. On February 8, 1917, Mr. W. M. Kidwell of Savannah collected a fine set of four fresh eggs near Pooler. This set is now in the collection of T. D. Perry. These are the only eggs of this species that have been taken in the county. On April 8, 1917, while in company with T. D. Perry, I flushed an adult and four nearly grown young from a cover of tall dried grass interlaced with low bushes in a tract of wet woods just east of Big Four Park. Although I saw the exact spot where two of the birds alighted, I did not again succeed in flushing them. The locality where I noted these birds affords ideal nesting sites for this species, and there is no doubt in my mind that this brood was hatched close to the point where I noted it.

Catoptrophorus semipalmatus semipalmatus — Willet.

The Willet's haunts are sand banks and mud flats adjacent to sounds and inlets, from which, during low tide, when they are exposed, the birds glean an abundant supply of food. This species breeds abundantly on most of the small coastal islands and hammocks between Tybee and Warsaw islands. Apparently it is absent from Ossabaw island, for I noted none on the north end of that island during a part of May, 1915. Its center of abundance on the coast of Chatham county is the southern end of Cabbage island, where numbers annually resort to breed. It nests sparingly on Buck Hammock, where I noticed a nest on June 14, 1914, containing four eggs on the point of hatching. On July 4, 1915, I flushed an adult from a nest on Cabbage island containing four eggs which also were on the point of hatching. This is my latest breeding record. In 1917 I again visited Cabbage island, and on May 13

noted a dozen or more nests containing four eggs each, all far advanced in incubation. This is the earliest date upon which I have noted full complements of eggs.

The nesting environment of this species is the shell-strewn and grassy areas well above high water mark. It is essential that there be an abundance of vegetation as protection for the eggs and young. The bare wind-swept sandy areas are never used as nesting sites, as their aspect is continually changing, due to the absence of vegetation necessary to bind the sand to prevent its shifting. When placed among wild oats and other dense beach vegetation, Willets' nests are exceedingly hard to find if the birds are not incubating. The exact location of ninety percent of the nests I have found was made known to me by flushing the sitting bird. If the uninitiated bird student desires a glimpse of their treasures he should never visit their breeding grounds before the sun is well up, as an early morning hour will generally prove to be an unfortunate and disappointing choice of time. At this time the birds are feeding, and therefore are absent from their nests. Willets, of course, feed at other times of day, but it is only at a very early hour that a concerted movement of the birds toward their feeding grounds is observed. Oftentimes this species makes no nest other than scooping out a shallow depression in the sand to prevent the eggs from rolling. On many occasions, however, I have found really elaborate nests of soft fibrous grasses gathered from localities some distance away. Quite frequently, too, I find eggs deposited in grassy spots in which situations the birds use the growing grass for nest material, simply bending it down and arranging it in a circular manner. The usual complement of eggs is four, and provided the first laying is hatched and the young successfully reared, the birds will not lay again that season. It is usually necessary, however, for a large percentage of the birds to lay two or three sets of eggs before they are finally successful in raising a brood. In addition to those that are collected by ornithologists and others, numbers of eggs are destroyed by predatory animals, and unusually high tides wash many away. Being

rather handsome, and exhibiting considerable variation, they are much in demand by oölogists. The ground color is usually olivaceous-drab, but often is brownish-olive and sometimes light clay-color. The markings are numerous; generally heavy; sometimes evenly distributed over the entire egg though generally thickest and largest at the greater end. The color of the markings is umber-brown of varying shade. Besides this there are numerous paler shell-spots. Average size of eggs, 2.00 x 1.50.

Willets appear to be greatly concerned when their breeding grounds are invaded. Whenever I visit Cabbage island the landing is usually made at a point near the north-western side, in order to avoid dangerous breakers. Most of the Willets inhabiting the island breed close to this point, and a moment after I set foot upon land the air is filled with gyrating, vociferous birds. As long as a person remains in the vicinity of their nests, the birds keep up a continual outcry; circling back and forth overhead, and often hovering on quivering wings. Frequently they alight on some nearby mud flat or sand bank, and gather in groups of three or four.

This species has noticeably decreased in numbers during the past six years. It shows a very strong attachment to a locality as long as favorable conditions exist there. However, incessant persecution will finally drive it to other sections.

Ochthodromus wilsonius — Wilson's Plover.

This dainty bird of the beaches breeds abundantly on the coast islands. It is, however, absent from many localities which apparently are suitable. The breeding season commences in May, my earliest record being May 13, 1915, when I noted full complements of fresh eggs on Ossabaw island. Its nesting environment is substantially the same as that of the Willet, and the two are ordinarily found breeding in close proximity. It is more abundant on Cabbage island than anywhere else in the county, although the beach area suitable for nesting is of rather small extent. It makes no nest other than scooping out a shallow hole in

the bare sand. Three eggs is the full complement. The ground color is pale buff; occasionally deep buff; several specimens I have seen were nearly pure white. The markings are blackish or very dark brown, and are mere dots and specks, but spread thickly and evenly over the egg. Very rarely do they tend to congregate about the larger end, or show a tendency to aggregate into splashes. The average measurements are 1.45 x 1.05.

Although not wary in the sense that they cannot be closely approached when absent from their nests, Wilson's Plovers invariably leave their eggs while the intruder is yet some distance away. As their eggs harmonize perfectly with the sand and shells among which they are deposited, they are very difficult to discover. A method I pursue, which I usually find successful if the air is still and the sand not settled by rain, is to systematically follow the birds' tracks which invariably leads me to their nests; for, according to my observations, the birds usually. when leaving their eggs, run some distance before taking wing. They exhibit much solicitude when their breeding grounds are invaded, following the intruder for long distances and uttering a sharp whistling note consisting of a single syllable.

The young are adepts at hiding among the grass and shells, and it is difficult for the observer to locate them even though knowing exactly where to look for them. They are able to run about immediately after leaving the shell, as the following occurrence will show: On May 31, 1917, a novel and interesting incident occurred in connection with my study of the nesting habits of this species. In company with G. R. Rossignol and T. D. Perry, I visited Cabbage island, where Wilson's Plovers nest in some numbers. Mr. Perry, desirous of securing eggs of this species and the Willet, had collected a few full sets of each, and a single egg of the Wilson's Plover which he supposed was addled. Returning in the late forenoon to the summer home of Mr. Rossignol on Wilmington island where we were staying, we deposited the collecting basket containing the eggs in a room, and retired to the front porch of the house. An interval of about two hours had elapsed when

I heard a faint peeping sound emanating from the room in which we had left the collecting basket. Upon investigation, I discovered that the Wilson's Plover egg had hatched, and the downy youngster was actively running about the room, seemingly much at home in its strange environment. The specimen, preserved in alcohol, is now in Mr. Rossignol's collection.

Haematopus palliatus — OYSTER-CATCHER.

Although this fine bird nested abundantly on this coast twenty or twenty-five years ago, as I am informed by T. D. Perry, it is now so rare that I have seen but two nests during the past ten years. On May 10, 1915, Frank N. Irving, in whose company I was, found a single egg deposited in a depression on top of a wall of oyster shells on Raccoon Key. On the 15th we returned to the Key, but discovered that during our absence an unusually high tide had washed the egg off the wall. During an expedition to Cabbage island on May 12, 1918, in quest of eggs of McGillivray's Seaside Sparrow (*Passerherbulus maritimus mcgillivraii*), T. D. Perry and I located a set of three slightly incubated eggs of the Oyster-catcher. These eggs also were deposited in a slight depression on top of a bank of oyster shells which had been thrown up by the surf. Where nesting sites of this character can be found, this species always selects them. The eggs are creamy white or pale buff, thickly spotted with very dark brown. They measure 2.25 x 1.50. This species is very uncommon and widely scattered in this county during the breeding season, as well as during the winter months, and I have had almost no opportunities to observe its habits. The few individuals that I have encountered were excessively shy, leaving the vicinity at my approach.

BIRD BANDING IN NORTHERN MICHIGAN DURING THE SEASON OF 1920

BY DAYTON STONER

Bird banding, as has many another phase of zoölogical science, has had its inception in a rather sporadic and ill-defined manner. And, like most things, it has undergone a process of evolution during which time various modifications and vicissitudes have been encountered.

So far as the writer is aware Audubon was the first person in America to attempt bird banding. He writes as follows: "I attached light threads to their (young Phœbes in the nest) legs; these they invariably removed, either with their bills, or with the assistance of their parents. I renewed them, however, until I found the little fellows habituated to them; and at last, when they were about to leave the nest, I fixed a light silver thread to the leg of each, loose enough not to hurt the part, but so fastened that no exertion of theirs could remove it." The next season, "Having caught several of the birds on the nest, I had the pleasure of finding that two of them had the little ring on the leg."*

Since the first attempts at bird banding, considerable development and progress are to be noted, particularly since 1908, when the first concentrated movement in this work was undertaken by the New Haven Bird Club. Previous to this time some headway had been made in Europe where banding was indulged in about 1899 and beginning with 1902 a few individuals in the United States engaged in this phase of ornithological endeavor in an effort to throw some light on the travels of birds by means of attaching to them inscribed metal bands.

It was soon found that the efforts of only a few persons in so large a field would avail little and the matter having been brought to the attention of the American Ornithologists' Union in November, 1908, it was considered with fa-

*Audubon, John James, American Ornithological Biography, II, 1834, 126.

vor and within approximately the next eight months 5,000 bands were issued of which about 1,000 were placed and from which 30 return records were obtained by December, 1909.

A more definite organization now seemed advisable and accordingly at a meeting of the American Ornithologists' Union held in New York City on December 8, 1909, the American Bird Banding Association was formed. However, owing to various difficulties, little was accomplished by this organization and late in 1911 the Linnaean Society of New York offered to come to the rescue. A committee of five was appointed to arouse interest and raise funds both of which were done with gratifying results. In the spring of 1912, 4,173 bands were distributed among forty-four persons in widely separated parts of the country. 800 of the bands were placed on seventy-three species of birds.

Since 1912 it again seems that the bird banding work was continued only by an occasional enthusiast here and there, but with the announcement of Mr. E. W. Nelson, Chief of the United States Biological Survey, in May, 1920, that that organization would henceforth conduct this work, banding has taken on a new lease of life. Under the direction and guidance of the Biological Survey definite and valuable results should soon be forthcoming. In spite of the numerous handicaps encountered by the Survey in taking over this work it has succeeded in interesting to date about one hundred observers to whom approximately 5,000 bands have been issued.

Since the work of banding is encouraged among all persons and organizations interested in birds it is desirable that only a limited number of styles of bands be used in order to avoid confusion and that the work of distribution and recording of the bands and returns be done most effectively by this responsible central organization. Accordingly the experience of earlier investigators has been drawn upon and this more or less mechanical part of the work has been elaborated and standardized and a system of recording has been carefully worked out.

The Biological Survey is now considering plans to secure the permanent coöperation of Universities, Colleges and Agricultural Colleges throughout the country in bird banding and when these plans have been developed more carefully and a larger number of organizations and individuals have become interested in this effort the volume of data and results should accumulate rapidly.

Up to this time two principal methods of securing birds for banding have been followed. First, securing young birds just before they are ready to leave the nest, and second, taking adult birds by means of systematic trapping. The latter method is a more recent development of the work although it has been carried on with unusual success by Baldwin in Ohio and Georgia and valuable results have already been obtained without in any way injuring the birds.

Bird banding is not to be construed as offering encouragement in the shooting or taking of birds for the express purpose of recovering the bands but sooner or later many of these banded birds will fall into human hands. Every field observer, collector and sportsman should be on the lookout for banded birds and whenever one is found the number or, better still, the band itself if the bird is dead, should be forwarded to the United States Biological Survey, Washington, D. C., along with any pertinent data concerning the taking of the bird in order that the records may be kept as complete and up to date as possible.

Procedure to be followed in banding birds.

Any person or organization expecting to band birds must first secure, through the offices of the United States Biological Survey, a Federal permit authorizing the taking of migratory birds for scientific banding purposes only. The State Game Department concerned is then advised of the granting of such permit and a State permit is issued.

The proper permits having been secured, application should then be made to the Biological Survey for an assortment of bands of different sizes. In the writer's experience the sizes most commonly used are Nos. 1, 1A, 2 and 4, while occasionally a few of the large adjustable bands may

be employed to advantage. These bands are of thin pressed aluminum and each bears a number stamped in the metal. This number is registered in the files of the Biological Survey.

When the band is about to be placed the smallest sized band that will close around the tarsus of the bird without binding or chafing should be selected. The band should not hang loosely, since grasses, twigs or thorns might catch beneath it and cause inconvenience or even death to the bird, thereby frustrating the very thing for which the banding was done. It is often convenient to lap over the ends of the band instead of having the ends meet. Where this is done care should be taken to see that the edges of the lap are smooth and that the band does not pinch or bind. A pair of small round-nosed pliers or a pair of heavy tweezers is the best instrument for manipulating the bands.

Before placing the band the number that it bears should be carefully noted (do not trust to memory for this) along with the name of the species banded, the locality in detail, date, approximate age of the bird, name of the person doing the banding and any other remarks pertinent to the occasion. These data should be transferred to a book or card system maintained by the bander and in addition they must be transferred to a special sheet or schedule furnished by the Biological Survey; this should be sent in about every two to four weeks during the banding season.

Banding at the Michigan Biological Station.

One of the most feasible means of securing birds for banding is to detail the young birds, before they are ready to leave the nest, as bearers of these aluminum legends. Birds which are just hatched or which are only a few days old should not be banded. In our experience, we found it much better to wait until the birds were fully fledged. Although the tarsi of birds in this stage are more or less fleshy, they do not become larger so that allowance need not be made for increase in size.

This method of securing birds to be banded was pursued by the writer at the University of Michigan Biological

Station on Douglas Lake during July and a part of August, 1920, at which time he had charge of the work in Ornithology at the Biological Station. The Douglas Lake region offers many favorable habitants for nesting birds. Suitable nesting sites are present in great variety, food is plentiful and the habitations of man are comparatively few. However, it was surprising to discover the extraordinary mortality among young birds due to what we may term natural causes. In all probability our attention should not have been called to this as well as to many other interesting and instructive facts concerning young birds had it not been for the intimate contact experienced while banding these birds in the nest. For the students, the banding seemed to lend added interest and zest to their bird study work and they were the more easily encouraged to be on the alert for something new and different. Additional opportunity was thus given for observation and study on behavior, nesting sites, nest materials, etc., all of which afforded the student a wealth of first-hand knowledge as well as created interest in the marking of the birds themselves.

As a result of our activities which extended over a period of six weeks, a total of 115 birds belonging to 20 different species were banded. 106 of these represented nestlings occupying 39 nests; eight others were young birds which were captured after leaving the nest and the additional one was an adult bird.

Following is the list of species banded along with the number of individuals of each species.

Spotted Sandpiper (*Actitis macularia* (Linn.))—4 juvs.
Black-billed Cuckoo (*Coccyzus erythrophthalmus* (Wils.))—3 juvs.
Belted Kingfisher (*Ceryle alcyon* (Linn.))—6 juvs.
Northern Flicker (*Colaptes auratus luteus* Bangs)—1 juv.
Whip-poor-will (*Antrostomus v. vociferus* (Wils.))—2 juvs.
Nighthawk (*Chordeiles v. virginianus* (Gmel.))—1 ad.
Kingbird (*Tyrannus tyrannus* (Linn.))—3 juvs.
Crow (*Corvus b. brachyrhynchos* Brehm.)—2 juvs.
Cowbird (*Molothrus a. ater* (Bodd.))—3 juvs.
House Sparrow (*Passer d. domesticus* (Linn.))—4 juvs.

Chipping Sparrow (*Spizella p. passerina* (Bech.))—12 juvs.
Slate-colored Junco (*Junco h. hyemalis* (Linn.))—9 juvs.
Song Sparrow (*Melospiza m. melodia* (Wils.))—11 juvs.
Cliff Swallow (*Petrochelidon l. lunifrons* (Say))—14 juvs.
Cedar Waxwing (*Bombycilla cedrorum* Vieill.)—14 juvs.
Red-eyed Vireo (*Vireosylva olivacea* (Linn.))—4 juvs.
Redstart (*Setophaga ruticilla* (Linn.))—1 juv.
House Wren (*Troglodytes a. aedon* (Vieill.))—4 juvs.
Hermit Thrush (*Hylocichla guttata pallasi* (Cab.)—6 juvs.
Robin (*Planesticus m. migratorius* (Linn.))—11 juvs.

Reasons for banding birds.

It may now be proper to inquire what we may reasonably be expected to learn from the banding of birds. A good deal has been written about this in one place and another so that a brief resume is all that seems necessary at this time. In the following paragraphs the writer has attempted to set forth by a series of questions, followed in some cases by answers, something of what has been learned and what may be learned from the, as yet comparatively meager, information which is now at hand.

1. Do birds return to the same nesting area for several seasons?

An interesting record illustrating this point is given in a recent number of Bird-Lore (XXII, No. 4, 1920, 249). At Lake Forest, Illinois, on May 25, 1919, a male Rose-breasted Grosbeak was banded (No. 49510) and then permitted to escape. He mated and assisted in rearing a brood of young during the summer. On May 2, 1920, No. 49510 returned to the same place and was again taken by the individual who captured him the preceding summer.

Even with the limited data now at hand similar cases might be cited with other species of birds.

2. Do birds return to the same area to winter year after year?

Numerous instances of such returns might be cited but one of Baldwin's records will answer the question for at least one White-throated Sparrow. This individual was banded on February 27, 1915, at Thomasville, Georgia, No. 15053) and was taken in a trap the following March at the same place. During the interim the bird had presumably

spent the winter either in northern United States or in Canada. With the banding of more birds the likelihood will be greater of finding out *just where* in the north these or other birds nest.

3. Do nesting birds use the same nest and have the same mates season after season?

4. Do birds wander far from their nests in search of food?

5. Do certain birds rear a second brood in the same nest or in the same region as the first brood?

6. Do young birds return to breed to the spot in which they were reared?

No. 251, a half-fledged Robin, was banded at Kingston, Rhode Island, August 4, 1908, and was recovered April 9, 1909, at the same place not more than 200 yards from the orchard in which it was reared.

7. Do migrating birds stop off at the same feeding places *en route* year after year?

8. Do certain individual birds come and go over the same migration route?

Records of the movements of *individual* birds will give valuable information concerning some of the general problems of migration. However, some means must be available for positively identifying these individuals, a means to be attained only by banding or otherwise marking in some permanent manner.

9. What is the rate of travel (not flight) of certain species of birds?

10. What is the rate of geographical extension of a given species?

11. How long do birds live?

A young Common Tern was banded at St. Clair Flats Canal, Michigan, August 13, 1909 (No. 4590). The bird was recovered at Whitebread, Ontario, Canada, August 5, 1912.

A young bluebird banded at West Allis, Wisconsin,

July 5, 1909, was killed by a Shrike at Evansville, Illinois, April 1, 1912.

All these and a host of other interesting, inviting and important questions yet remain to be answered more fully. The opportunities are large; the workers are few; only a bare beginning has been made.

In conclusion—the results already obtained from bird banding have justified its practice; but the work should not devolve upon a limited number of persons. It should be made the duty and the effort of many individuals and organizations for it is only by carrying on the work in an extensive way that large and valuable results can be obtained. With the plan now headed by the United States Biological Survey renewed energy and activity should greet the efforts of this active and efficient branch of the Federal Department of Agriculture.

The writer would take this final opportunity of emphasizing to the members of the Wilson Ornithological Club the desirability of their coöperation in furthering the work of bird banding and in seeing to it that every banded bird which is secured shall have a "return" record sent to the proper authorities.

COMPARATIVE PERIODS OF NESTLING LIFE OF SOME NORTH AMERICAN NIDICOLÆ

BY FRANK L. BURNS

[CONTINUED FROM LAST ISSUE]

Again to show the fine detailed work of some of our observers, I have assembled a table exhibiting day by day the increase in weight (in grams) of some nestlings taken in 1906 by the late John F. Ferry, Lake Forest, Ill. The Cedar Waxwing study (Aug. 20-28) is incomplete, but the development and length of nestling life of the Cowbird (June 11-22), Yellow Warbler (June 21-July 2) and Wood Thrush (June 11-22), exhibit a relatively slower growth, considering size, than the Catbird (June 13-24) and the Brown Thrasher (July 8-19).

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Cowbird . .				7.7	23.3		24.9		31.1	28.0		**
Cedar Waxwing	2.2	3.0	4.5	8.0	7.7				*			
	3.0	4.0	6.5	13.5	12.5	15.5	13.0		*			
	4.0	5.4	8.0	17.0	15.0	20.0			*			
	3.1	4.9	8.0	17.0	15.5	19.0	16.0		*			
Yellow Warbler				7.8	8.0	8.3	8.5					**
				6.2	7.2	8.3	7.3	7.7	9.4			**
Catbird . .		4.6			18.6	23.3	23.3	29.5	31.1	31.1	**	
ave. 3 yg.		6.2	15.5	15.5	15.5	22.0	25.2	27.2	28.5	**		
Brown Thrasher	3.1	7.5	9.0	12.0	17.5	21.2	25.5	40.5	51.5	47.5	49.5	**
	6.0	9.5	13.0	17.0	23.5	28.2	35.0	38.0	45.0	39.0	42.5	**
	8.2	8.5	11.0	15.5	22.0	27.5	34.0					**
Wood Thrush	6.5											
	3.1		6.2	18.6			24.9		37.3	34.2		**

* Found dead. ** Departed.

There is probably no other incident in the life history of our American birds in which our ornithologists are more profoundly ignorant than that of the approximate duration of nestling cycles. That of the Booby is said to be three months or more, that of the Gannet five or six months and of the Albatross ten months. Mr. A. C. Read has returned a nestling blank showing that the Ground Dove had completed a nestling cycle in 27 days. Mr. Charles H. Rogers, in New Jersey, and the writer, in Pennsylvania, found that of the Mourning Dove to be 30-32 days; a much shorter period than that of the somewhat nidifugous Whip-poor-will or Nighthawk, if one bases the completion of the cycle at the flying age. The Phoebe usually requires less than 40 days (Burns Ms., Vickers Ms.) and the Crested Flycatcher 51 days (McKennon Ms.). Some of our Sparrows, Mockers, and the Robin have a cycle of 30-35 days (Mss. of Burns, Ferry, Link, McKennon and Redfield) being two or more weeks less than the Baltimore Oriole and Purple Grackle. The House Wren and Bluebird complete in about 35-45 days, while the Bewick's Wren and Chickadee require 52-53 days (Wiley Ms., Link Ms.). The Warblers have a short cycle but as a rule are rather tardy nesters.

I regret that my material is altogether too scanty to more than suggest a few simple conclusions on the nestling life periods of our Nidicolæ.

First. There seems to be a consistant increase in the period of nestling development up to and including family groups, to correspond with the increase in size of the parent bird, and this must be taken into consideration in making

further comparisons. Considering size, the Hummingbird group appears to exceed all other groups, both in duration of incubation and the length of time the young remain in the nest: approaching like periods of the much larger-bodied and closely allied Swift.

Second. The normal nestling period of any species equals or exceeds the period of embryological development; i.e. when the period of incubation of a species is brief, the time in which the young occupy the nest is correspondingly brief and when the incubation of a species is of long duration the young are a long time helpless. Fright or restlessness may drive some species prematurely from the nest, especially ground or near ground nestling species like the Pelican, Cormorant, Ibis, Bittern, Heron, Dove, Vulture, Marsh Hawk, Short-eared Owl, Cuckoo, Horned Lark, Bobolink, Meadowlark, and many of the Sparrows, Warblers, Mockers and Thrushes, but they seldom travel far from the nest for some time.

Third. Young born naked, never acquiring natal down (gymnopædic, or psilopædic) including the Parrots, Cuckoos, Woodpeckers, Kingfishers, Hummingbirds and Swifts, develop slower physically than most nidicolous birds born with or acquiring a full or scanty clothing of natal down; though this is not so apparent in the American Cuckoos, since the early development of the feet of these birds enables them to clamber about at an early age; an important qualification for the perservation of the young of these large, bush-nesting birds. The European Cuckoo, however, vacates the nest only a few days before flight which occurs when about twenty-one days old (*Cf. Taylor, The Strand Magazine, xli, pp. 652-656*). It is noteworthy that the nestlings of most other species habitually breeding in situations affording extraordinary protection from natural enemies and the weather, or of species nesting in less protected situations but capable of defending the young from any ordinary danger, have young that are rather slow to depart from their nests and their departure signifies the completion of their fledgling, as well as nestling life. The impulse to vacate is not ordinarily

quickened by forces without and is therefore largely dependent upon maturity of fledgling life.

Fourth. Nothing seems more probable than that the Nidicolæ evolved from the Nidifugæ, and that if the economy of nature demanded it, all North American Nidifugæ, with the possible exception of the *Anseres*, Shore and Gallinaceous birds would readily yield to nidicolous habits and conditions.

An interesting writer (*Cf. Finn, Bird Behavior Psychical and Physiological*) regards the Passive or Nestling (Nidicolæ) type as degenerate, and states that with the exception of the Osprey, which has variegated down, all Nidicolæ appear self-colored, usually black, white, grey or buff, when they have down at all; while the Active or Chick (Nidifugæ) type are generally characterized by the more primitive striped, pied marked or spotted down.

The appended table of periods of nestling life was originally collated not only from my own notes and the manuscript of my friends, but from the pages of our leading American ornithological periodicals and many other ornithological works, for my own personal use in connection with bird banding, and though neither remarkable for the number of volumes searched or ideal for the purpose of comparison, it will at least call attention to the need of such data. Perhaps an ideal table would include the entire juvenal life from birth to the acquisition of equilibrium or wing power.

ALCIDÆ:

Tufted Puffin, remains in nest until fully feathered and able to take care of itself (Bent quoting Emerson, Life Histories North American Diving Birds, p. 85.)

Puffin, able to leave burrow in 4 or 5 weeks and follow parents to sea (Bent, Life Hist. N. A. Diving Bds., 92.)

Horned Puffin, leave nest before able to fly (Bent quoting Turner, Ibid., 101.)

Rhinoceros Auklet, nearly full grown (Willett, Bird-Lore, xiv, 423); evidently estimated at about 30 days (Bent quoting Heath, Life Hist. N. A. Diving Bds., 106.)

Cassin's Auklet, fully 21 days, until able to fly (Heath, Condor, xvi, 34; Bent, Life Hist. N. A. Diving Bds., 113.)

Crested Auklet, until able to fly, about the last of August or later (Bent, Ib., 122.)

Whiskered Auklet, until fully fledged (Bent quoting Stejneger, Ib., 125.)

Least Auklet, data seems to indicate 4 or 5 weeks (Bent, Ib., 180.)

Black Guillemot, about 25 days (Bent quoting Walker, Ib., 208); for a long time, until fully fledged or nearly so (Bent, Ib., 159.)

Mandt's Guillemot, develops slowly (Bent, Ib., 164.)

Pigeon Guillemot, until fully fledged (Bent quoting Emerson, Ib., 170.)

Dovekie, the young begin hatching about the middle of July and the first birds come off the nests about the middle of August (Bent quoting Ekblaw, Ib., 218.)

DIOMEDEIDÆ:

Laysan Albatross, 6 months before flying (Fisher, Auk, xxi, 19.)

PORCELLARIIDÆ:

Audubon's Shearwater, large downy young (Plath, Bird-Lore, xv, 349.)

Storm Petrel, until fully fledged and able to fly (Macgillivray, History of British Birds, v, 468.)

Leach's Petrel, possibly 60 days or more (Knight, Journal Maine Ornithological Society, ii, 5.)

Black Petrel, more than 14 days (Van Rossem, Condor, xvii, 77.)

Soccoro Petrel, same as Black Petrel (Van Rossem, Ib.)

Fork-tailed Petrel, nearly full grown (Willett, Bd.-Lore, xiv, 423.)

PHAETHONTIDÆ:

Yellow-billed Tropic Bird, about 60-62 days (Gross, Auk, xxix, 60; Plath, Wilson Bulletin, No. 95, 50.)

SULIDÆ:

Booby, approximately 3 months from laying of egg to flight of young (Chapman, Camps and Cruises of an Ornithologist, 217.)

Gannet, appears to remain in the nest for ten weeks, and after that it stands on its ledge, or even on its old nest, for two or three weeks more (Gurney Ms.)

ANHINGIDÆ:

Anhinga, born naked, will jump from the nest to the water, dive and swim, at a very early age, not over three weeks, but often stays in the nest or close by for eight or nine weeks, as near as I have noted (Bayard Ms.)

PHALACROCORACIDÆ:

Cormorant, apparently considerably over a month (Audubon,

Ornithological Biographies); until more than half grown (Knight, J. M. O. S., ii, 37.)

Double-crested Cormorant, long period (Palmer, Condor, xviii, 123); on July 9th the young were in the egg or very small, none were out of the nests; on July 23rd they were full grown and running after their parents to be fed. Within a day or so a few began trying their wings and descending to the water 200 or 300 feet below, but it was probably considerably later before they had all flown, later than August 6th (Townsend Ms.)

Florida Cormorant, almost full grown (Phillips, Auk, xxvii, 314); until able to fly, about eight or nine weeks (Baynard Ms.)

Brandt's Cormorant, at least over 25 days (Loomis, Calif. Water Birds, No. 1, 219.)

Pelagic Cormorant, nearly full grown (Willett, Bd-Lore, xiv, 428.)

PELECANIDÆ:

American White Pelican, about 42 days before flight (Finley, Condor, ix, 38); 14 days in nest (Skinner, Ib., xix, 181.)

Brown Pelican, 10 weeks before flight (Chapman, Camps and Cruises of an Ornithologist, 94.)

PLATALEIDÆ:

Roseate Spoonbill, at least 30 days (Chapman, Bd.-Lore, xvi, 217.)

IBIDIDÆ:

White Ibis, 14 days in nest and 42 days before flight (Baynard, Bluebird, vii. 16.)

Glossy Ibis, same as White Ibis (Baynard, Wils. Bul., No. 84, 103.)

CICONIIDÆ:

Wood Ibis, about 8 or 10 weeks before leaving nesting tree (Baynard Ms.)

ARDEIDÆ:

American Bittern, about 14 days (Chapman, Bd.-Lore, i, 149; Tabor, Ib., vii, 168; Rockwell, Condor, xiv, 119.)

Least Bittern, about 9 days (Potter, Cassinia, xx, 14) 7 days, leaving nesting site in 13 days (Ib., xxiii, 30.)

Great Blue Heron, about 35 days (Cameron, Auk, xxiii, 256; Carriger and Pemberton, Condor, x, 81; Huey, Ib., xvii, 59.)

Egret, 11 or 12 weeks before independent of parents (Baynard Ms.)

Green Heron, about 14 days (Wheelock, Auk, xxiii, 432.)

Anthony's Green Heron, more than 15 days (Huey, Condor, xviii, 59.)

Black-crowned Night Heron, about 20 days (Burns Ms.); less

than 30 days (Vinal, Bd.-Lore, xix, 164); able to leave in 21 days, stayed 35 days (Rockwell, Condor, xii, 118.)

COLUMBIDÆ:

Band-tailed Pigeon, about 30 days (Bendire quoting Bryant, Life Hist., I, 127.)

White-crowned Pigeon, approximately about 30 days (Bendire, Ib., 131.)

Passenger Pigeon, about 14 days (Deane quoting Whittaker, Auk, xiii, 236.)

Mourning Dove, 10-12 days (Burns and Rogers Mss.; Gifford, Condor, xi, 85, and Bird News, No. 2, 8.)

White-winged Dove, between 21 and 28 days (Wetmore, Condor, xxii, 141.)

Ground Dove, 10 days (Read Ms.)

CATHARTIDÆ:

California Vulture, over 6 months (Finley, Condor, xii, 5).

Turkey Vulture, about 6 weeks (Jackson, Bd.-Lore, v, 186.)

Black Vulture, flight in 14 weeks (Baynard, Bluebird, vii. 31.)

FALCONIDÆ:

White-tailed Kite, about 30 days (Peyton, Condor, xvii, 230.)

Marsh Hawk, 33-34 days (Saunders, Condor, xv, 103; Peabody, Bd.-Lore, ii, 49.)

Sharp-shinned Hawk, 22-24 days (Rust, Condor, xvi, 14); 32 days (Willard, Ool., 8, 63.)

Cooper's Hawk, 33 days (Burns Ms.)

American Goshawk, 60 days (Knight, Bds. Me., 225.)

Red-tailed Hawk, about 60 days (Seaton, Auk, ii, 22.)

Red-shouldered Hawk, 25 days (Hegner, Bd. Lore, viii, 151.)

Texas Red-shouldered Hawk, about 30 days (Willett, Auk, xxxii, 323.)

Swainson's Hawk, 28-35 days (Wheelock, Bds. Calif., 153; Finley, Auk, xxx, 174; Ib., pl. xiii); 28-35 days (Cameron, Auk, xxviii, 174.)

Broad-winged Hawk, 41 days (Burns, Wils. Bul., No. 76-77, 268, also Ib., No. 37, 90.)

American Rough-legged Hawk, about 42 days (Bendire, Life Hist., I, 258.)

Ferruginous Rough-leg, about 54 days (Cameron, Auk, xxxi, 163.)

Golden Eagle, 60-68 days (Finley, Condor, viii, 1; Cameron, Auk, xxii, 162, and xxv, 251); about 11 weeks (Macpherson, Home Life of the Golden Eagle.)

Bald Eagle, more than 42 days (Hoxie, Auk, xxvii., 452; Baynard, Wils. Bul., pl. between 122 and 123); about 65 days (Bailey,

Bds. Va., 120); probably at least 90 days (Oberholser, U. S. Dept. Agri. Biol. Survey, bul. 27, 9.)

Black Gyrfalcon, approx. over 60 days (Bendire quoting Turner, Life Hist., I, 187.)

Duck Hawk, 40-44 days (Allen and Knight, Bd.-Lore, xv, 6; Dixon, Condor, x, 198; 41 days (Richards, Auk, xxxvi, 350.)

American Sparrow Hawk, 27-29 days (Sherman, Auk, xxx, 417.)

PANDIONIDÆ:

American Osprey, about 28 days (Chapman, Bd.-Lore, x, 155; Wheelock, Bds. Calif., 165); 35-45 days (Howe, Auk, xii, 389; Skinner, Condor, xix, 120); about 42 days (Chapman, Camps and Cruises of an Ornithologist, 52.)

STRIGIDÆ:

American Barn Owl, 56 days (Finley, Am. Bds., 81.)

BUBONIDÆ:

American Long-eared Owl, about 28 days (Burns Ms.); about 35 days (Wheelock, Bds. Calif., 169.)

Short-eared Owl, 14 days, though only a few feet from the nest for a month longer (Saunders, Condor, xiv, 120.)

Florida Barred Owl, about 42 days (Bendire quoting Ralph, Life Hist. I, 342.)

Screech Owl, 30-32 days (Sherman, Auk, xxviii, 166.)

California Screech Owl, about 35 days (Bendire quoting Emerson, I, 342.)

Rocky Mountain Screech Owl, at least 30 days (Rockwell, Condor, ix, 144.)

Great Horned Owl, 44-46 days (Keys, Condor, xiii, 1.)

Pacific Horned Owl, 49 days (Dixon, Condor, xvi, 53.)

Western Horned Owl, about 56 days (Cameron, Auk, xxiv, 268.)

PSITTACIDÆ:

Carolina Paroquet, more than 45 days (Nowotny, Auk, xv, 31.)

CUCULIDÆ:

Road-runner, less than 7 days, and in 30 days able to care for itself (Sutton, Bd.-Lore, xiii, 58, and xv, 324.)

Yellow-billed Cuckoo, 7 days (Herrick, Jour. Exp. Zoöl., ix, 171; Pop. Sci. Monthly, 77, 95; Burns Ms.): 9 days (Bayliss, Auk, xxxv, 162.)

California Cuckoo, less than 14 days (Jay, Condor, xiii, 69.)

Black-billed Cuckoo, 6-7 days, climbing until the 15th day (Saunders, Bd.-Lore x, 205; Shuver, B.M.O.C., ii., 16; Herrick, Pop. Sci. Monthly, 77, 128.)

ALCEDINIDÆ:

Belted Kingfisher, 24-28 days (Baily, Bd.-Lore, ii, 77; Herrick,

Pop. Sci. Monthly, 77, 133; Wheelock, Auk, xxii, 70; Finley, Am. Bds., 146.)

PICIDÆ:

Hairy Woodpecker, about 21 days (Bendire, Life Hist., i, 49.) Burns Ms.)

Harris's Woodpecker, 21-28 days (Wheelock, Bds. Calif., 365.)

Cabanis's Woodpecker, nearly 28 days (Wheelock, Ib., 367.)

Downy Woodpecker, at least 11 days (Burns Ms.)

Nuttall's Woodpecker, 21-28 days (Wheelock, Bds. Calif., 365.)

White-headed Woodpecker, nearly 28 days (Wheelock, Ib. 367.)

Arctic Three-toed Woodpecker, 28-35 days (Wheelock, Ib., 369)

Yellow-bellied Sapsucker, more than 10 days (Bolles, Auk, ix, 109.)

Red-breasted Sapsucker, 24 days (Wheelock, Bds. Calif., 464.)

Northern Pileated Woodpecker, evidently about 30 days (Carriger and Wells, Condor xxi, 155); nearly 42 days (Wheelock, Bds. Calif., 373.)

Red-headed Woodpecker, about 35 days (Potter, Bd.-Lore, xiv, 216.)

California Woodpecker, about 20-21 days (Myers, Condor, xvii, 183); about 24 days (Wheelock, Bds. Calif., 378.)

Lewis's Woodpecker, about 21 days (Bendire, Life Hist., ii, 120); 21-28 days (Wheelock, Bds. Calif., 466.)

Flicker, 26-28 days (Sherman, Wils. Bul. 72-73, 133.)

Red-shafted Flicker, nearly 21 days (Wheelock, Bds. Calif., 190.)

MICROPODIDÆ:

Chimney Swift, about 26-31 days, including time spent close by nest (Bendire quoting Widmann, Life Hist., ii. 179; Honeywell, Bd.-Lore, xi, 266; Knight, Bds. Me., 302; Burns Ms.)

White-throated Swift, about 21 days (Hanna, Condor, xi, 89.)

TROCHILIDÆ:

Blue-throated Hummingbird, 18 days (Brewster, Auk, vii, 206.)

Ruby-throated Hummingbird, 22 days (Metcalf, Ool., 28, 163; Hitchcock, Bd-Lore, xix, 79); 28 days (Smith, Bird-Lore, xxii, 275.)

Costa's Hummingbird, 17 days (Wheelock, Bds. Calif., 422.)

Black-chinned Hummingbird, 16 days (Lacey, Auk, xxviii, 210.)

Anna's Hummingbird, 21 days (Bowles, Colnor, xii, 127; Bryan, Ib., iv, 35; Wheelock, Bds. Calif., 424.)

CAPRIMULGIDÆ:

Whip-poor-will, two or more days if undisturbed (Job, The Sport of Bird Study, 108.)

Nighthawk, a few days (Job, Ib., 110); able to fly in 18 days (Herrick, Home Life of Wild Birds, 81.)

TYRANNIDÆ:

Kingbird, 18 days (Weldon, Bd.-Lore, viii, 122; Herrick, Home Life of Wild Birds, 28.)

Crested Flycatcher, 18-20 days (Knight, Bds. Me., 311; McKinnon Ms.)

Ash-throated Flycatcher, 16 days (Wheelock, Bds. Calif., 326.)

Phœbe, 15-16 days (Knight, Bds. Me., 313; Vickers Ms.; Morrell, J.M.O.S., iv, 32; Saunders, Condor, xvi, 131); 20 or 21 days (Clise, Bd.-Lore, xx, 378.)

Say's Phœbe, 16-18 days (Saunders, Condor, xvi, 134.)

Black Phœbe, 16-18 days (Jewett, B.C.O.C., i, 13.)

Olive-sided Flycatcher, about 21 days (Bendire, Life Hist., ii, 285.)

Wood Pewee, 16-18 days (Bendire, Ib., ii, 291; Knight, Bds. Me., 317.)

Traill's Flycatcher, about 14 days (Bendire, Life Hist., ii, 309.)

Alder Flycatcher, 13 days (Knight, Bds. Me., 320; Stanwood, J.M.O.S., xii, 5.)

Least Flycatcher, 13-15 days (Knight, Bds. Me., 322; Herrick, Bd.-Lore, iv, 80.)

Wright's Flycatcher, 14 days (Wheelock, Bds. Calif., 445.)

Vermillion Flycatcher, 16 days (Wheelock, Ib., 470.)

ALUDIDÆ:

Prairie Horned Lark, 7 days (Terrill, Wils. Bul., 100, 138; about 10 days (Judd, Bd.-Lore, x, 129.)

Pallid Horned Lark, 9 days (Wheelock, Bds. Calif., 297.)

Dusky Horned Lark, 6 or 8 days (Kennedy, Condor, xv, 136.)

Streaked Horned Lark, 7-13 days, flying in 19 days (Merrill, Auk, v, 260.)

(TO BE CONCLUDED IN NEXT ISSUE)

THE WILSON BULLETIN

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The editor will be away from home from June 23 to September 15, but mail will be attended to during that time if addressed to 352 West College Street, Oberlin, Ohio. Requests relating to completion of your files or for back numbers ought to be deferred until the return of the editor. Much of the information addressed to the editor can as well be secured from the secretary, A. F. Ganier, 2507 Ashwood Avenue, Nashville, Tenn.

FIELD NOTES

TWO BACHMAN'S SPARROW'S NESTS NEAR BARDSTOWN, KENTUCKY

Though Bachman's Sparrow (*Peucæa æstivalis bachmani*) is by no means a rare bird in certain favorable localities near Bardstown the finding of a nest has, until this year, been one of the unsolved problems concerning the birdlife of this locality. On April 26th, 1921, and the two days following, it was my good fortune to observe a pair of these sparrows nest building. The location was the corner of a wheat field; a clover field adjoined it on one side, and a narrow strip of pasture land bordered by a thicket extended along the other. At the time I was busy with team "snaking" out poles from a clearing in the thicket. The sparrows came to the edge of this clearing for nesting material and apparently were not at all disturbed by our operations. The male generally accompanied the female as she carried the nesting material, and, frequently, he sang while she searched over the ground for the piece of dead grass suited to her needs. But the song seemed to come from far out in the wheat field, yet the bird was only ten yards away. Once the female came within twenty-five feet of the team to get a piece of grass, and many times we passed ten or twelve yards distant from the nest while the female sat on the fence nearby. On May 2nd the first egg was laid, and the following day there was a second egg and also a Cowbird'e egg. Two days later the eggs had disappeared and my hopes for a set of Bachmn's Sparrows disappeared with them. The nest was five yards from the wire fence and about three yards back in the wheat. It

was very bulky, composed mainly of grass, with some shreds from corn stalks, and a few horse hairs in the lining. A row of wheat supported the nest at the rear, the next row was several inches in front of it; there was no other vegetation about the nest.

The afternoon of May 16th Mr. Albert F. Ganier and myself were working over a clover and timothy field at my home place in hopes of locating a nest of the Grasshopper Sparrow. The proverbial barefoot boy appeared on the scene, and when he learned that we were looking for bird's nests told us of a "ground sparrow's" nest in an adjoining field, which we decided to investigate. Arriving at the nest we found one of the parent birds about to feed the young, and were able to get a good look at it and to satisfy ourselves that it was a Bachman's Sparrow. The nest held four birds about six days old. The location of the nest was very different from the first. It was under a piece of brush which had been thrown in a "gully" to check the action of the rain, on an old worn out, washed away piece of land. There was little vegetation about the nest, only a little grass and some weeds and briers growing up through the brush; and surrounding this the ground was almost bare for a space several feet wide. There was a great contrast between the situation and surroundings of these two nests and both are different from the situation in which Mr. Ganier has found this species nesting at Nashville, Tennessee, as described and illustrated in the March issue of the Wilson Bulletin.

BEN J. BLINCOE.

Bardstown, Ky.

STARLINGS NEST AT HURON, OHIO

During February, 1921, I had had reports that there were some strange blackbirds staying at Mr. Carl Heimberger's farm about two miles southwest of town, but it was March 13th before I had a chance to investigate.

On that day, however, my wife and I walked out that way on one of our hikes and found eight or ten starlings. They came from the cupola of the barn one or two at a time and there seemed to be more inside. The long yellow bill and speckled plumage identified them at once. Mr. Heimberger stated that this was the second winter these birds had been around the barn. The winter before there had been about six or eight, but they had left in the spring and returned again in the fall at the approach of cold weather. They had increased in number until in February there must have been nearly two hundred. They did not stay around in the daytime, but would leave and return in the evening about four o'clock, collecting first in some tree and then going to the cupola of the barn to roost. During the week following our visit all the starlings but one pair left and these seemed to be investigating the hollow stub of a branch on an old apple tree near the barn. On

April 21st Mr. Helmberger reported four pale blue eggs in a nest about a foot below the opening, and on May 1st I found the nest with five eggs and the female incubating. She left the nest at our approach, but was back in the tree when we withdrew and would not go on the nest as long as we were in sight.

This seems to be the first reported nesting for Ohio.

H. G. MORSE.

Huron, Ohio.

(On May 15 a Starling in full plumage and full voice was noted on Catawba Island, a few miles east of Port Clinton, Ohio. This bird was seen by three persons, including the writer, who are familiar with the species.—Lynds Jones.)

DENVER BIRDS

Since the last list published, of Denver birds, in this Bulletin (September, 1917), the writer has seen the following species, and subspecies within the corporate limits of this city:

Pied-billed Grebe (*Podilymbus podiceps*)—One appeared in a small lake in Washington Park April 27, 1920, and remained thereabouts all summer; another (or the same individual) appeared in the same place this spring.

Ring-billed Gull (*Larus delawarensis*)—One seen in Washington Park April 24, 1920.

Buffle-head Duck (*Charitonetta albeola*)—Two males, and two females were seen in Washington Park October 26, 1919.

Lesser Yellow-legs (*Totanus flavipes*)—One seen in Washington Park April 24, 1920.

Batchelder's Woodpecker (*Dryobates pubescens homorus*)—One noted in Cheeseman Park September 29, 1920, and on April 3, 1921.

Olive-sided Flycatcher (*Nuttallornis borealis*)—One seen in Cheeseman Park May 13, 1921.

Western Flycatcher (*Empidonax difficilis difficilis*)—One detected in Cheeseman Park September 3, 1919.

Traill's Flycatcher (*Empidonax trailli trailli*)—One seen on September 1 and 2, 1917, and on September 26, 1920, all in Cheeseman Park.

Clarke's Crow (*Nucifraga columbiana*)—A pair remained in the neighborhood of the Country Club and Cheeseman Park from January 1 to April 30, 1920.

Townsend's Warbler (*Dendroica townsendi*)—Four were seen in Cheeseman Park by Dr. A. K. Fisher and the writer on September 23, 1920.

Pileolated Warbler (*Wilsonia pusilla pileolata*)—One seen in Cheeseman Park September 5, 1917, and on September 14 and 23, 1920, all in Cheesman Park.

Olive-backed Thrush (*Hylocichla ustulata swainsoni*). All seen in Cheeseman Park June 2, 1920.

These are the first records for Denver, judging by published records, and the writer's experience; the Denver List, mentioned above, gave 187 species and subspecies. The present additions swell the list to 199.

W. H. Bergtold.

1159 Race Street, Denver, Colo.

THE LONG-BILLED MARSH WRENS OF NEBRASKA

Long-billed Marsh Wrens (*Telmatodytes palustris* subspp) occur very commonly in suitable localities over practically the whole of Nebraska, at least as migrants. At Lincoln they arrive in early to middle April (April 6, 1913; April 14, 1917), become numerous during latter April and early May, and pass on by the middle of May (May 12, 1918; May 13, 1917). Early in September they again appear (Sept. 2, 1919; Sept. 8, 1908), become numerous later in that month, and then mostly pass on, a few lingering until late October (Oct. 23, 1909). This status is typical for this species over the greater part of southern Nebraska, except that in very favorable localities a pair may now and then remain to nest (cf. Tout, *Proc. N. O. U.*, ii, p. 45). In the marshy tracts along the Missouri River these birds nest more commonly, and have been found occasionally nesting near Omaha in June and July (*vide* Samuel Aughey, I. S. Trostler, L. Skow, etc.). About many of the lakes of the Sandhill Region of Nebraska they now nest abundantly (cf. J. S. Hunter, *Proc. N. O. U.*, ii, p. 83), and formerly did so much farther to the eastward, even to Holt County.

When Ridgway described *T. p. iliacus*, the Prairie Marsh Wren, in 1903, largely restricting the typical Long-billed Marsh Wren, *T. p. palustris*, to the region east of the Alleghenies, our Nebraska Long-billed Marsh Wrens were, of course, all referred in 1904 to the newly differentiated form (*Prelim. Rev. Birds Nebraska*, p. 110).

But as specimens of migrating Long-billed Marsh Wrens were collected at Lincoln from time to time, it became evident that two distinct forms were passing through this locality each spring and fall. The less common of these two forms, apparently present for only a comparatively short period in April and September (April 20-24; Sept. 12-28), has the sides of the back, rump and upper tail coverts ochraceous tawny or russet, with the sides and flanks cinnamon buff, and obviously represents *T. p. iliacus* Ridgway. But the more common form has the sides of the back, rump and upper tail coverts darker and less reddish, about cinnamon brown, and the sides and flanks deep wood brown, thus agreeing in coloration with *T. p. palustris* (Wilson). This form is known to arrive in latter April and lingers into May, then reappears in early September and remains until late October or early November (April 29-May 6; Sept. 8-Oct. 23, or Nov. 2).

However, since Ridgway in 1904 gave the range of *T. p. palustris*

as "chiefly east of the Allegheny Mountains, west to western New York and Pennsylvania," and that of *T. p. iliacus* as from western Indiana westward over the prairies and plains, which distribution was practically confirmed by the A. O. U. Committee in 1910, it seemed highly unlikely that our common form of this species could be *palustris*, yet obviously they were different from *iliacus*. To answer this question a small series of specimens of each form was sent to Dr. Oberholser for opinion, and he has returned all of the lighter birds marked "*iliacus*" and the darker ones marked "*palustris*," meaning, no doubt, that under the currently recognized subspecies the Nebraska birds should be thus referred. This will make *T. p. palustris* an addition to the list of the birds of the state.

It must be noted, however, that Nebraska "*palustris*" have on the average a slightly longer wing and tail and a distinctly shorter culmen than typical *palustris* as defined by Ridgway, and also that Nebraska "*iliacus*" have a shorter culmen than the measurements of *iliacus* given by Ridgway, though in other measurements they are practically the same. Thus the supposed slight differences in size between the two forms pratically disappear so far as Nebraska specimens are concerned, as the following table will show:

					Depth of	
"*palustris*"	Length	Wing	Tail	Cul.	Bill	Tar.
Lincoln, Nebr., May 6, 1919 ♂ Ad.	125	53.0	45.0	13.0	3.1	19.5
Lincoln, Nebr., Sept. 23, 1919 ♂ Ad.	122	53.0	42.0	13.5	3.5	20.0
Lincoln, Nebr., Apr. 29, 1916 ♂ Ad.	119	52.5	45.5	14.2	3.4	19.0
Lincoln, Nebr., May 5, 1917 ♂ Ad.	126	52.0	43.0	13.4	3.0	20.0
Nebr. City, Nebr., Nov. 2, 1901 ♂ Ad.	120	51.0	39.0	12.0	3.0	18.5
Lincoln, Nebr., Sept. 8, 1908 ♂ Ad.	122	50.0	41.0	12.0	3.0	18.5
Average of 6 ♂ ♂:	122	51.9	42.6	13.0	3.1	19.0
"*iliacus*"						
Havelock, Nebr., Apr. 20, 1901 ♂ Ad.	127	54.0	47.0	13.1	3.0	19.0
Lincoln, Nebr., Sept. 28, 1901 ♂ Ad.	127	52.5	46.5	13.0	3.0	18.5
Lincoln, Nebr., Apr. 24, 1903 ♂ Ad.	120	52.5	43.8	13.0	3.3	18.5
Lincoln, Nebr., Sept. 12, 1902 ♂ Ad.	117	51.5	42.0	13.0	3.2	18.0
Lincoln, Nebr., Sept. 12, 1902 ♂ Ad.	117	51.5	42.0	13.0	3.2	18.0
Average of 5 ♂ ♂:	122	52.5	44.3	13.0	3.1	18.5

Measurements of adult ♂ ♂ given by Ridgway:

	Length	Wing	Tail	Culmen
T. p. palustris	103-117.5 (110)	48-54 (50.6)	38.5-46.5 (41.4)	14-15.5 (14.7)
T. p. iliacus	110-127.5 (116.1)	49.5-56 (52.3)	40.5-46.5 (43.6)	13-15.5 (14-4)

Measurements of adult Nebraska ♂ ♂:

Nebraska "*palustris*" 119-126 (122)	50-53 (51.9)	39-45.5 (42.6)	12-14.2 (13.0)
Nebraska "*iliacus*" 117-127 (122)	51.5-54 (52.5)	42-47 (44.3)	13-13.1 (13.0)

It is not known which form is the local breeder, as unfortunately no specimens of breeding birds are at hand to determine this point. Very likely some future reviser of the Long-billed Marsh Wrens may work out more accurately the breeding ranges of the several subspecies, and may possibly separate our Nebraska "*palustris*" from the *palustris* defined by Ridgway.

MYRON H. SWENK.

Lincoln, Nebraska.

THE SUBSPECIES OF NEBRASKA SAVANNAH SPARROWS

Nebraska ornithologists have recognized since 1896 that two subspecies of the Savannah Sparrow migrated through the state, but there has been much confusion as to the distribution of the two subspecies, due largely to faulty identifications.

In 1904 the data at hand was interpreted to indicate that *P. s. savanna* was an abundant migrant over eastern Nebraska, west to about the 99th meridian, arriving in late March or early April, mostly passing northward to breed, but occasionally to be seen in the state during the summer and possibly breeding, and again migrating through eastern Nebraska in October; while *P. s. alaudinus* was regarded as migrating over the entire state and possibly breeding westwardly, its dates being about the same as those of *P. s. savanna* (*Prelim. Rev. Birds Nebraska*, pp. 85-86).

In 1910, however, Dr. Joseph Grinnell divided the former subspecies *alaudinus*, restricting that name to the birds breeding in "the vast interior of northwestern North America, from Bering Sea and Kotzebue Sound to the Mackenzie region," while the birds breeding in the Great Basin he named *P. s. nevadensis* (*Univ. Cal. Pubs. Zoölogy*, v. pp. 311-318). This subspecies was accepted by the A. O. U. Committee in 1912. In 1915 Dr. L. B. Bishop showed that the birds breeding in North Dakota and wintering in Texas were also *nevadensis* (*Condor*, xvii, pp. 186-187). This led to the suspicion, which was confirmed by a study of specimens, that probably the birds we had been calling *alaudinus* were really *nevadensis*.

To make the point certain, a series of skins was sent to Dr. H. C. Oberholser for naming. In this series were sixteen skins from southeastern Nebraska, mostly from the vicinity of Lincoln, and of these Dr. Oberholser returned two marked *savanna* and fourteen marked *nevadensis*. In our entire series of twenty-nine specimens from eastern Nebraska, five are *savanna* and twenty-four *nevadensis*. This proportion may be regarded as representing fairly accurately the relative abundance of these two subspecies during migrations along the 97th meridian in Nebraska. The dates on the specimens of *nevadensis* are March 22, April 5, 19, 20, 21, 23, 24 and 28, May 1, September 10 and 14, October 8, 9, 10, 12, 14, 16 and 19 and November 2, there being two with dates October 10, 16 and 19 and three with the date October 14. The five specimens of

savanna were collected March 19, April 9 and 20 and October 5 and 19. Savannah Sparrows neither breed nor winter at Lincoln, but they summer occasionally at Omaha and may breed there. I. S. Trostler has stated that they breed at Omaha uncommonly, June 1 to 12. Our field data shows them as appearing in the spring at Lincoln March 17 to 30 becoming abundant April 1 to May 12, and then scatteringly present until May 27. In the fall they reappear September 5 to 30, are abundant October 1 to 20, and then in declining numbers to November 7. With little doubt these dates apply chiefly to *nevadensis*.

Our specimens indicate *P. s. savanna* as a migrant in eastern Nebraska west to Lincoln, appearing about as early as *nevadensis* (Dunbar, Nebr., March 19). No specimens of *savanna* from west of Lincoln have been examined. In the irrigated North Platte valley of western Nebraska *P. s. nevadensis* summers (Mitchell, July 7), and probably breeds in the grassy margins of the seepage ponds there, but no nests have been found.

We must, therefore, revise our previous idea of the distribution of Nebraska Savannah Sparrows somewhat. *P. s. savanna* is evidently a rather uncommon migrant and possible breeder in eastern Nebraska, occurring west only to about the 97th meridian, while *P. s. nevadensis* is an abundant migrant over the state, summering and probably breeding westwardly.

Myron H. Swenk.

Lincoln, Nebraska.

NOTES—HERE AND THERE

Conducted by the Secretary

The Secretary would appreciate receiving the names of all those having a complete, or nearly complete file of Wilson Club publications. Due to the limited circulation of early volumes it is likely that there are fewer complete sets in existence than of the A. O. U. or Cooper Club publications. Our Editor has a small stock of back numbers on hand which may be ordered from him for completing files.

The Indiana Audubon Society has put itself into more tangible form by issuing the first of what is planned to be a series of bulletins. We understand that credit for this first number, issued in March, is chiefly due to Mr. Frank C. Evans, the Secretary. Its 24 pages contain a number of articles of merit, appropriately illustrated and typographically attractive as well.

Dr. Albert H. Wright of the Cornell Zoölogical Laboratory, and co-author, with Mr. Francis Harper, of a paper on the "Birds of the Offekinoke Swamp," in Georgia, is spending the spring again in the swamp. He is supplementing his previous studies as a ba-

sis for papers on other phases of the zoölogy of the region. Mr. Harper is also with Dr. Wright.

Dr. Lynds Jones will spend the summer months on another of his transcontinental bird trips. He leaves Oberlin on June 23, with a party of sixteen and travels by auto via the Iowa lakes, through North Dakota and Montana, to and including the Yellowstone, from thence by way of Flathead Lake and Glacier Park, over the Cascade to Ranier Park and the coast. The party will there disband and Dr. Jones and his son have planned to make a trip to Alaska following this auto trip. The party will spend its time studying the ornithology of the regions traversed. Fortunate indeed are those who are able to go with our Editor on these tours.

The annual meeting of the Nebraska Ornithological Union was held at Omaha on May 13th and 14th.

The organization of various state ornithological clubs is a most commendable step toward the encouragement of serious bird study and the coöperation of such workers in limited areas. Kentucky has a most promising group of earnest bird students, who have just formed the Kentucky Ornithological Society. This organization limits its members to the few who are doing thorough and systematic bird study and is entirely distinct from the several local Audubon Societies now functioning in that state. The officers are Dr. R. S. Tuttle of Lexington, President; Prof. Gordon Wilson of Bowling Green, vice-president; Benj. J. Blincoe of Bardstown, editor and curator; Brasher C. Bacon of Madisonville, secretary-treasurer.

John Burroughs, with whose writing on birds and popular natural history our readers are familiar, died on March 29th. Mr. Burroughs was in his eighty-fourth year and was perhaps the most widely read of all nature writers.

The Secretary spent the last half of May among the swamps and lakes of western Tennessee, listing and studying the birds of that area. Extensive drainage operations have eliminated many of the marshes and smaller lakes where water birds formerly bred.

The joint spring meeting of the Indiana Academy of Science, the Indiana Audubon Society and the Nature Study Club of Indiana, was held at Indianapolis on May 27th and 28th. The two days were spent afield visiting points near the city of especial interest to the naturalist. A local committee arranged a most attractive program and it is needless to say that the meeting afforded an opportunity for field study and getting acquainted that was most commendable.

H. E. Wheeler of Conway, Arkansas, has been specializing this spring on the nesting habits of the Pileated Woodpecker. He succeeded in finding six breeding pairs and added to his collection two nice sets, of four and five eggs respectively.

One of the more interesting and useful tasks undertaken by the Biological Survey is the determination of our bird population by means of a considerable number of "bird counts" or censuses. These are taken by volunteer observers, over restricted areas, during the breeding season. Just at this time The Survey is desiring to extend the scope of this work and our members may perform a service by coöperating. Full instructions and report blanks may be secured upon written application.

The Chicago Ornithological Club has secured permanent quarters in one of the session rooms of the Crerar Library. This is indeed a fortunate selection and the C. O. C. now enjoys a convenient meeting place in the downtown "Loop."

Our membership teams have slowed down a bit in their work, doubtless due to the pressing call of the outdoors for their leisure time. From the results already obtained it is evident that our next year's list will show a substantial gain, and we hope to cut the usual "delinquent list" to a minimum. If members will communicate the names of good membership material to the Secretary it will be doing a good turn for the Club.

Mr. Wm. I. Lyon of Waukeegan, Ill., is one of our most enthusiastic and successful bird-banders. Last year he banded no less than 360 birds, most of which were caught in traps. In the excellent spring number of the Illinois Audubon Bulletin he gives an outline of the methods he used and some of the results obtained.

MINUTES OF THE TWENTY-SECOND ANNUAL MEETING OF THE NEBRASKA ORNITHOLOGISTS' UNION

The twenty-second annual meeting of the Nebraska Ornithologists' Union was held at Omaha, Nebraska, Friday and Saturday, May 13 and 14, 1921. This meeting was held in joint session with the Nebraska Audubon Society, as was the nineteenth annual meeting on May 10 and 11, 1918, and, as at that meeting, the sessions were held at the First Unitarian Church, 31st and Harney Streets.

The business meeting was called to order at 6:00 p. m. by Dr. R. H. Wolcott, in the absence of the President, Dr. H. B. Lowry. The reports of the officers were received, and the financial report of the Secretary-Treasurer was referred to a committee composed of Mr. J. T. Zimmer and Mrs. G. A. Loveland for auditing.

The names of Mrs. Margaret M. Corey of Lincoln, Mr. F. M. Dille of Valentine, and Mr. C. K. Hart of Prosser, were proposed for membership, and all were elected.

It was moved and carried that nominations for new officers be made from the floor. As a result of the nominations made in that way the following officers were elected for 1921:

President—Dr. H. Hapeman, Minden.

Vice-President—Mrs. H. C. Johnston, Superior.

Secretary-Treasurer—Prof. M. H. Swenk, Lincoln.

A motion was carried authorizing the Secretary-Treasurer to donate $30.00 of the funds of the Union toward the financial support of the Wilson Bulletin during the current year, with the understanding that additional Nebraska material would be published by the Bulletin as offered.

Eleven members were present at this session of the N. O. U., as follows: Mesdames W. F. Baxter, L. R. Button, Blanche Garten, H. C. Johnston, G. A. Loveland, L. H. McKillip and Mary St. Martin and Messrs. L. O. Horsky, M. H. Swenk, R. H. Wolcott and J. T. Zimmer.

Adjournment of the business session took place at 6:30 p. m., shortly after which the members of the N. O. U. and Nebraska Audubon Society gathered in the Assembly Room of the church for the joint banquet. About one hundred members of the two societies were present at the banquet, along with several guests of the two societies from the neighboring state of Iowa.

Following the banquet Mr. Fitz Roberts, President of the Nebraska Audubon Society, introduced Dr. H. Gifford of Omaha, who spoke on "Some Random Observations of a Bird Chaser" giving especially his recent experiences on a trip to British Guiana. Prof. M. H. Swenk then announced the plans for the field day and introduced Dr. R. H. Wolcott of Lincoln, who spoke briefly on the

"History of Bird-Study Organizations in Nebraska." At the conclusion of Dr. Wolcott's remarks the two societies adjourned, at 9:30 p. m.

On Saturday, May 14, the nineteenth annual field day of the N. O. U. was held in conjunction with the members of the Nebraska Audubon Society. There were two principal field parties, the first entering the Fontenelle Forest along the Missouri River, south of Omaha, at 7:00 a. m., and the second an hour later. About seventy-five persons participated in the field day, the various parties meeting at noon for a picnic lunch, the out-of-town people as the guests of the Nebraska Audubon Society. The total list of the day included eighty-seven birds, as follows:

Bluebird, Robin, Olive-backed Thrush, Gray-cheeked Thrush, Wood Thrush, Blue-gray Gnatcatcher, Ruby-crowned Kinglet, Long-tailed Chickadee, White-breasted Nuthatch, Brown Creeper, Long-billed Marsh Wren, Short-billed Marsh Wren, Western House Wren, Brown Thrasher, Catbird, Redstart, Yellow-breasted Chat, Maryland Yellow-throat, Kentucky Warbler, Louisiana Water-Thrush, Grinnell Water-Thrush, Oven-bird, Cerulean Warbler, Myrtle Warbler, Yellow Warbler, Tennessee Warbler, Orange-crowned Warbler, Black and White Warbler, White-eyed Vireo, Yellow-throated Vireo, Warbling Vireo, Red-eyed Vireo, Bank Swallow, Tree Swallow, Barn Swallow, Purple Martin, Scarlet Tanger, Dickcissel, Indigo Bunting, Rose-breasted Grosbeak, Cardinal, Towhee, Swamp Sparrow, Lincoln Sparrow, Song Sparrow, Field Sparrow, Clay-colored Sparrow, Chipping Sparrow, White-throated Sparrow, Harris Sparrow, Western Grasshopper Sparrow, Goldfinch, Bronzed Grackle, Baltimore Oriole, Orchard Oriole, Western Meadowlark, Red-winged Blackbird, Cowbird, Crow, Blue Jay, Least Flycatcher, Traill Flycatcher, Wood Pewee, Phœbe, Crested Flycatcher, Kingbird, Ruby-throated Hummingbird, Chimney Swift, Yellow-shafted Flicker, Red-headed Woodpecker, Yellow-bellied Sapsucker, Northern Downy Woodpecker, Hairy Woodpecker, Belted Kingfisher, Yellow-billed Cuckoo, Broad-winged Hawk, Turkey Vulture, Western Mourning Dove, Spotted Sandpiper, Greater Yellow-legs, Sora, King Rail, Black-crowned Night Heron, Green Heron, Great Blue Heron, Blue-winged Teal and Black Tern.

Compared with the list made in exactly the same locality almost exactly three years previously, we find that twenty-one birds, namely the Brown Creeper, Long-billed and Short-billed Marsh Wrens, Kentucky Warbler, Bank Swallow, Purple Martin, Swamp and Western Grasshopper Sparrows, Least Flycatcher, Wood Pewee, Hairy Woodpecker, Yellow-bellied Sapsucker, Chimney Swift, Turkey Vulture, Spotted Sandpiper, Greater Yellow-legs, Sora, King Rail, Green Heron, Black-crowned Night Heron and Black Tern, were noted in 1921, but not in 1918; but that in 1921 fourteen birds, namely the Carolina Wren, Black-poll, Palm, Golden-winged

and Prothonotary Warblers, Bell Vireo, Rough-winged Swallow, Summer Tanager, Lark Sparrow, Rusty Blackbird, Acadian Flycatcher, Arkansas Kingbird, Sparrow Hawk and Killdeer, were not noted though seen in 1918.

The Blue-gray Gnatcatcher was found just beginning construction of a nest. At the N. O. U. field day last year a pair with a completed nest was found.

REPORT OF THE TREASURER, 1920-21

Receipts

Cash on hand, May 9, 1919	$ 43.59
Annual dues collected	102.00
Interest on investment	10.87
	$156.46

Expenditures

Wilson Bulletin	$ 58.50
Postage	4.00
Balance on hand, May 13, 1921	93.96
	$156.46

PUBLICATIONS REVIEWED

Birds of Swope Park, in the Heart of America

The latest bird book for the middle west has just been issued by the McIndoo Publishing Company of Kansas City. It is entitled "Birds of Swope Park, in the Heart of America,"[1] and has been written by Mr. A. E. Shirling. For some time Kansas City has been developing a group of active bird students, including Mr. Ralph Hoffman, now of California, and Mr. Harry Harris. This little booklet on the birds of Swope Park now places its author among the "upper-classmen" of the middle west.

Swope Park, which lies within the city limits of Kansas City, Missouri, is a tract of 1332 acres in the valley of the Blue River, and it includes all the variety of topography and vegetation which is found in the Missouri River valley. It is reported to be an ideal haunt for seventy-eight species of nesting birds; and this number includes some not known in the Sioux City region, such as the Tufted Titmouse, Northern Parula Warbler, Worm-eating Warbler, Blue-winged Warbler, Prothonotary Warbler, Summer Tanager, etc. A Blue Grosbeak nested just outside the bounds of the park in 1918, making a total of seventy-nine for the park and vicinity.

The author's method was to divide the park into seventeen smaller areas, arbitrarily bounded. He made an early morning

[1] Birds of Swope Park in the Heart of America, Kansas City, Missouri. By A. E. Shirling, M.A. 1920. McIndoo Publishing Company, Kansas City, Mo.

survey of each of these areas during the breeding season (June), and counted the male birds by their song. The total of this census gave 2030 birds assumed to be nesting males. Assuming that each of these birds was mated there were, then, 4060 breeding birds in the park, or a trifle better than three to the acre.

The book also contains an annotated list of all the birds known to occur within the park, including migrants and winter birds; and 173 birds are thus listed.

The author gives a chapter on the "morning awakening" song of the birds, which makes an interesting contribution to this subject. He also proposes to make it a finable offense to permit the English Sparrow to nest on one's premises. An exceptionally good map of Swope Park is attached to the inside of the cover, and will be of great value to local students, as well as of interest to the general reader.

By way of adverse criticism attention might be called to the very many typographical errors in the scientific nomenclature, and to one or two cases of transposition of the halftone legends. Two or three arithmetical errors also occur on page 67.

On the other hand the little book is excellently conceived and will help many a beginner in bird-lore, while being read also, with enjoyment, by the experienced student. The text is presented in a literary style which deserves notice, and which reveals the fact that the author is thoroughly in love with the woods and wild life. The most enjoyable writers on birds are usually those whose interest and sympathy are not confined to that one aspect of nature. The fund of information presented is based upon much labor, and will make the task easy for those who wish to study birds in the area treated. T. C. S.

List of North Dakota Birds Found in the Big Coulee, Turtle Mountain and Devil's Lake Region

There appeared in 1917 a "List of North Dakota Birds"[1] by Elmer T. Judd. This list contains two hundred and fifty-five species, which have been observed by the author in th northern part of that state, particularly in the region of Devil's Lake and the Turtle Mountains. The work upon which this list is based was done between the years 1890 and 1896. So far as the reviewer is aware this list has been distributed only privately. It appears to have been very carefully prepared, and is no doubt the most authentic list yet published for the region covered. T. C. S.

[1] List of North Dakota Birds Found in the Big Coulee, Turtle Mountains and Devil's Lake Region. Published 1917 by the author, Elmer T. Judd, Cando, N. D.

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